Application No. 09/833,282 **Art Unit: 2839**
Docket N .: Haleos 2001-124 **Examiner: Michael C. Zarroli**

REMARKS

Claims 1-3 and 5-76 are pending in the application, of which claims 1, 3, 5-17, 22-26, and 29-37 are allowed. Claims 2, 18-21, 27, 28, 38-40, 45, 46, 52-56, 63, 64, 71-73, 75, and 76 stand rejected. Claims 41-44, 47-51, 57-62, 65-70, and 74 are objected to. Claim 28 had been amended above. Two electronic IDS's have also been filed on October 30, 2003 and June 13, 2003, which Applicant respectfully requests be considered.

In the paragraph numbered "2." of the Office Action, attention was drawn to the fact that no power of attorney was received for the attorney of record in the RCE. A power of attorney and a statement under 3.73(b) has since been faxed to the Examiner on October 29, 2003. During a telephone interview with the Examiner on October 30, 2003, the Examiner stated that he would enter the power of attorney and statement under 3.73(b) in the case, or he would alert the undersigned to mail a duplicate copy of the power and 3.73(b) statement.

STATEMENT UNDER 1.113(b)

The undersigned representative would like to thank the Examiner for the courtesy of the telephone interview that was conducted on October 30, 2003. It is particularly appreciated that the interview was both scheduled and completed within 24 hours.

During the interview the rejections under 35 U.S.C. 112, 102, and 103 were discussed. The arguments made by the undersigned representative during the telephone interview are incorporated below under the section headings "REJECTIONS UNDER 35 U.S.C. 112", "REJECTIONS UNDER 35 U.S.C. 102", and "REJECTIONS UNDER 35 U.S.C. 103", respectively, which are incorporated into this 1.113(b) statement by reference.

During the interview it was agreed to amend claim 38 as indicated above to include the phrase "whereby a fiber of the first array is movable into and out of optical communication with a selected fiber of the second array to effect switching." Agreement was reached during the interview that the rejections of all claims under 35 U.S.C. 112, 102, and/or 103 are now overcome.

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SUPPLEMENTAL REPLY OF JUNE 26, 2003

In the paragraph numbered "1." of the Office Action, it is noted that the supplemental reply of June 26, 2003 refers to an amendment dated November 26, 2002 but that there is no amendment dated November 26, 2002 in the case. Applicant's undersigned representative believes that there is such an amendment in the case. However, in researching the matter, the undersigned believes that the amendment dated "November 26, 2002", which is the date of the certificate of mailing, may be entered the PTO system by its date of receipt, which is December 2, 2002. Accordingly, the Examiner's attention is directed to the amendment of December 2, 2002. The undersigned respectfully requests the Examiner consider the following statements in view of the December 2, 2002 amendment and confirm that the proper amendment has identified. As requested in the Office Action, the comments of the June 26, 2003 are reproduced below:

"Applicant would like to take the opportunity to clarify the record regarding the comments made by the prior representative in the amendment of November 26, 2002. In particular, at page 5, third full paragraph of the November 26 amendment, the previous representative characterized the detents 616 of Fig.6 as "horizontal grooves". The Examiner correctly noted in his subsequent office action that the specification uses the term "detent" with regard to element 616. Applicant agrees that the term "detent 616" is used in the specification. However, the term "detent" includes any suitable depression, such as a groove or a pit. In particular, the detent may have "alternative shapes suitable for retaining the roller elements 606 in place", such as a groove or a pit. (Specification, page 17, lines 10-11.)"

REJECTIONS UNDER 35 U.S.C. 112

Applicant notes with appreciation the Examiner's removal of the previous 112 rejections of claims 10, 59, 60, 69, and 70.

Claims 2, 18-21, 27, and 28 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Office Action states that the term "registration" or "register" is "a relative term which renders the claims indefinite" and inquires how are "components that are in registration or even 'partial registration' with each

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other related? Are they in contact, aligned, staggered etc.?" Also, a dictionary definition is provided in the Office Action that reads, "to adjust so as to be properly aligned". The Examiner inquires whether this definition is "what the applicant is indicating is the meaning of this term."

Applicant is using the terms "registration" and "register" in the sense of "alignment" and "align". Applicant respectfully submits that this is a meaning one skilled in the art would ascribe to these terms. Furthermore, the Examiner properly selected the sense of "align/alignment" from the list of possible alternative meanings set forth in the dictionary definitions attached to the Office Action. Applicant respectfully submits that none of the other dictionary definitions listed on the attachment provided is a possible alternative meaning in the context of the present application. Accordingly, the only definition one skilled in the art would select from the list provided is the definition that provides the sense of "align/alignment." The term "partial registration" has the meaning, for example, that "at least a portion of their respective grooves 103, 104 are in registration...", as set forth in the specification at page 9, line 7. Therefore, Applicant respectfully submits that there is no need for the Applicant to amend the specification to include a glossary defining the terms "registration" and "register", because these are known, unambiguous terms to one skilled in the art. For these reasons, Applicant respectfully requests withdrawal of the rejections of claims 2, 18-21, 27, and 28.

REJECTIONS UNDER 35 U.S.C. 102

Claims 38-40, 45, 46, 52-56, 63, 64, 71, 72, 73, 75, and 76 stand rejected under 35 U.S.C. 102(b) as being anticipated by Pimpinella (US 5,123,073). The Office Action indicates that "Pimpinella discloses a first (fig. 4) and second array (fig. 3) of optical fibers. Each array has a front face that is disposed facing the other (fig. 1). Pimpinella also discloses a friction-reducing element (72, 75, 77) 'intermediate' these faces that aid when the arrays are aligned to effect switching (col.6 lines 7-18)."

Applicant respectfully disagrees with the interpretation that Pimpinella discloses or effects switching. Rather, Pimpinella discloses a "precision optical fiber connector." In particular, Applicant does not agree that the type of movement disclosed in the text cited at

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column 6, lines 7-18 comprises switching. Instead, the text at column 6, lines 4-18 discloses a structure comprising three "spheres 72, 75, 77 [that] comprise a stabilizing tripod." "The first leg of the tripod structure ... is the lense-sphere 72, seen in FIGS. 9 and 10... [which] comes to rest in one of the alignment grooves 74..." (Column 5, lines 51-55.) "The second leg of the tripod is a second sphere 75, seen in FIGS. 9 and 10. Sphere 75 is fixed in a well 76... . When the upper holder 67 approaches lower holder 60, second sphere 75 finds a neutral position in a V-groove 76 located to one side of, and parallel to, the fiber V-groove 74 in holder 60 as seen in FIG. 7." (Column 5, lines 57-64.) " "[W]hile spheres 72, 75 can move somewhat in the grooves in a direction toward or away from the mating fibers contained in lower holder 60, the first and second spheres 72, 75 constrain the upper holder 66 or 67 from rotating. The third sphere 77... can only move and the direction described for the first and second spheres." (Column 6, lines 7-15.) "The tripod structure acts to prevent any relative angular rotation or movement of the opposing surfaces of lower holder 10 and upper holder 11 within their respective planes ... [which] assures that the connected optical fibers will be maintained in precise, co-axial relation... This aspect of the invention is particularly suited to the connection of single-and fibers, which require extremely high precision axial alignment." (Emphasis Added. Column 5, lines 15-26.)

Thus, sphere 72 and the associated optical fiber 68 are both disposed within groove 74 of the lower holder 60 as indicated by Figures 7-9. At all times fiber 68 is coaxial with and aligned to fiber 61. Fiber 68 is only permitted to move towards or away from fiber 61 and is constrained to remain aligned to fiber 61, which is a stated goal of Pimpinella: "As earlier noted, achieving precision in the end-to-end connection of one or more pairs of optical fibers is a generic problem. The described basic invention effectively provides highly accurate, reliable fiber end alignment which can be constructed inexpensively and utilized in a variety of connector housings." (Column 5, lines 4-9.) Moreover, Pimpinella specifically indicates that the distance of separation does not alter the optical connection between opposing fibers; hence, altering the distance of separation does not effect switching: "In all embodiments described above, it is not critical that the lense-spheres be maintained separate by any particular distance, because the light beams between the two are parallel and will not appreciable [sic] diffuse over slight distances." (Emphasis Added. Column 6, lines 35-39.)

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Thus, the axial motion in the Pimpinella device does not effect switching, because the fibers 61 and 68 remain in end-to-end axial alignment by the cooperation of spheres 72 and 75 in grooves 74 and 76 (Figs. 7 and 9). Therefore, Pimpinella does not disclose a switch but a "precision optical fiber connector", and none of the spheres 72, 75, 77 can be Applicant's claimed "friction-reducing element in the first groove to reduce friction between the first array and the second array as the first array is displaced relative to the second array, whereby a fiber of the first array is movable into and out of optical communication with a selected fiber of the second array to effect switching", for at least the reasons that switching is not effected by the Pimpinella device. (Emphasis Added.) The type of motion permitted by the spheres 72, 75, 77 of Pimpinella does not permit motion that effects switching. Pimpinella **teaches away from movement that would effect switching** between the upper and lower holders when Pimpinella states that the disclosed structure "assures that the connected optical fibers will be maintained in precise, co-axial relation..."(Column 5, lines 22-23) and "the light beams between the two [spheres 72, 65] are parallel and will not appreciable diffuse over slight distances." (Column 6, lines 35-39.)

For at least these reasons, Applicant respectfully requests withdrawal of the rejection of independent claim 38, as well as claims 39, 40, 45, 46, 52-56, 63, 64, 71, 72, 73, 75, and 76, which depend respectively therefrom.

REJECTIONS UNDER 35 U.S.C. 103

Claims 38-40, 45-46, 63-64, 71-73, and 75-76 under 35 U.S.C. 103(a) as being unpatentable over Basavanhally (US 5,337,384) in view of Kaplow (US 5,440,655). The Office Action states that "Basavanhally discloses a fiber optic array switch ... with a first (12, 14) and second array (13, 15). Each array has a front face that is disposed facing the other (fig. 1). Basavanhally also discloses a friction-reducing element (23, 24) 'intermediate' these faces that aid when the arrays are aligned to effect switching." Applicant respectfully disagrees with this interpretation of Basavanhally.

Basavanhally does not disclose an optical switch, but rather discloses an "optical fiber connector" in which two arrays of fibers are aligned to one another in fixed relation. Applicant first notes that Figs. 1 and 2 of Basavanhally do not disclose first and second "fiber

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arrays" as recited in independent claim 38, for at least the reason that there are no fibers in the apparatus illustrated in Figs. 1 and 2. A connector is illustrated comprising two fiber arrays, however, in Fig. 4, and a single fiber array is illustrated in Fig. 3. Referring to the connector of Fig. 4, an upper array (comprising fibers 49) and a lower array (comprising fibers 38) are shown in a fixed and predetermined location wherein each fiber 49 of the upper array is abutted to a respective fiber 38 of the lower array. Specifically, Basavanhally states that "[t]he present invention makes use of these principles for fixing the ends of an optical fiber bundle in a predetermined configuration, and it essentially provides that two such configured bundles can be abutted together so that light energy can flow smoothly from each fiber of one bundle into an aligned optical fiber of the other bundle." (Emphasis Added. Column 2, line 65-column 3, line 3.)

Applicant agrees with the Examiner that Basavanhally fails to disclose Applicant's claimed features of "a first groove disposed along a first path within the front face of the first array;[and] a second groove disposed along the front face of the second array" as recited in independent claim 38. In addition, however, Applicant submits that Basavanhally also does not disclose Applicant's claimed feature of "a friction-reducing element disposed in the first groove and intermediate the front face of the first and second arrays to reduce friction between the first array and the second array as the first array is displaced relative to the second array, whereby a fiber of the first array is movable into and out of optical communication with a selected fiber of the second array to effect switching." Applicant respectfully disagrees with the statement in the Office Action that the balls 23, 24 of Basavanhally are Applicant's claimed friction-reducing element.

The balls disposed between elements 12 and 14 and between elements 13 and 15 of Fig. 4 of Basavanhally are unnumbered. However, by reference to Fig. 1, which shows the same elements 12, 14, 13, 15, one concludes that the balls disposed between elements 12 and 14 and between elements 13 and 15 in Fig. 4 are alignment balls 23. Since the upper array includes elements 12 and 14, the alignment balls 23 are part of the internal structure of the upper array and are not disposed "intermediate the front face of the first and second arrays" as recited in claim 38. (Emphasis Added.) Likewise, since the lower array includes elements 13 and 15, the alignment balls 23 are part of the internal structure of the lower array and are not

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disposed "intermediate the front face of the first and second arrays" as recited in claim 38. (Emphasis Added.)

Moreover, the alignment balls 23 cannot move relative to the elements 12, 14, 13, 15 in which they are seated, because Basavanhally explicitly states and shows that the alignment balls 23 are permanently epoxied in place. ("The epoxying step has the effect of permanently bonding alignment balls 23 to the assembly..." Column 3, line 68-column 4, line 2. See Figs. 3 and 4, element 37.) For this additional reason, the alignment balls 23 are not suggestive of Applicant's claimed "friction-reducing element ... to reduce friction between the first array and the second array as the first array is displaced relative to the second array...", because the alignment balls 23 are permanently epoxied in place between the two elements 12 and 14 (or 13 and 15) which cannot be displaced relative to one another.

Turning now to the alignment balls 24, the alignment balls 24 are not suggestive of Applicant's claimed "friction-reducing element disposed ... intermediate the front face of the first and second arrays", for at least the reason the alignment balls 24 are not present between the two fiber arrays shown in Fig. 4. (Which is why the alignment balls 24 are not epoxied in place like the alignment balls 23.) The alignment balls 24 are present in the structure of Fig. 1; however, no fiber arrays are disclosed in Fig. 1, because there are no fibers in the apparatus of Fig. 1, as explained above. Indeed, due to the presence of the fixture 26 one could not even insert fibers into the holes 16 of elements 13, 15, and 21 to produce an array. Instead, Figs. 1 and 2 illustrate initial steps in fixing the alignment between certain elements of the Basavanhally connector prior to the insertion of fibers. (Column 3, lines 20-68.) The alignment balls 24 cannot be present in the final connector, because the alignment balls 24 would separate the arrays from one another preventing the stated goal of providing a device in which "two such configured bundles can be *abutted* together so that light energy can flow smoothly from each fiber of one bundle into an aligned optical fiber of the other bundle." (Emphasis Added. Column 2, lines 68-column 3, line 3.) The "alignment balls 24 are used for vertically aligning securing plates 12 and 13" and are not friction-reducing elements. (Column 3, lines 27-28.)

The above-listed deficiencies in Basavanhally are not overcome by the proposed combination with Kaplow. Therefore, the proposed prior art combination fails to disclose

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each and every element of claim 38. Accordingly, Applicant respectfully requests withdrawal of the rejection of independent claim 38, as well as claims 39, 40, 45-46, 63-64, 71-73, and 75-76, which depend respectively therefrom. In addition, yet further reasons exist for allowing claims 38-40, 45-46, 63-64, 71-73, and 75-76 over the proposed combination of Basavanhally with Kaplow.

Applicant respectfully submits that since **Basavanhally teaches away from an optical switch** there can be **no motivation to combine** the Basavanhally coupler with the Kaplow switch. Further, even if one were to include the grooves from Kaplow in the device of Basavanhally one would not arrive at Applicant's claimed structure as recited in claim 38, for at least the reason that the balls 23 of Basavanhally are not Applicant's claimed "friction-reducing element" for the reasons set forth above.

Turning to Applicant's position that Basavanhally teaches away from an optical switch, Applicant respectfully points out that the disclosed device of Basavanhally, as seen for example Fig. 4, is not an optical switch and cannot function as an optical switch. Applicant respectfully submits that the device as shown in Fig. 4 clearly illustrates that each fiber 49 of the upper array is fixedly abutted to a respective fiber 38 of the lower array, which prevents any switching between fibers pairs 49, 38. Epoxy 50 holds the fibers 49 in fixed relation to plate 14 and connector housing 51, and epoxy 48 holds the fibers 38 in fixed relation to plate 15 and connector housing 40. The fibers 49, 38 are fixed in place. Indeed, to reiterate, Basavanhally specifically states that the invention comprises "ends of an optical fiber bundle in a *predetermined configuration*, and it essentially provides that two such configured bundles can be abutted together so that light energy can flow smoothly from ***each*** fiber of one bundle into ***an*** aligned optical fiber of the other bundle." (Emphasis Added. Column 2, lines 65-column 3, line 3.) Hence, the predetermined and fixed configuration of fibers shows that Basavanhally teaches away from an optical switch. Thus, there can be no motivation to modify the optical connector of Basavanhally to provide an optical switch.

Regarding the language quoted in the Office Action at column 2, lines 29-31, Applicant respectfully submits that the quoted language does not state that the Basavanhally device is an optical switch but rather suggests that a single array of the type disclosed in Basavanhally may be utilized with some unspecified "free-space" switch, if desired.

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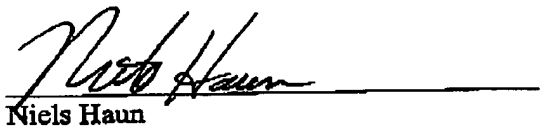
("Further, the invention lends itself well to the arrangement of optical fibers as described in the Basavanhally et al. patent. That is, if desired, the mounted fiber ends can be used to project light for free-space switching." Column 2, lines 26-35.) The quoted language is a mere invitation to invent and does not represent that the Basavanhally device is itself an optical switch. For these additional reasons, Applicant respectfully requests withdrawal of the rejection of claim 38, as well as claims 39, 40, 45-46, 63-64, 71-73, and 75-76, which depend respectively therefrom.

In view of the foregoing amendments and remarks, it is believed that the claims in this application are now in condition for allowance. Early and favorable reconsideration is respectfully requested. The Examiner is invited to telephone the undersigned in the event that a telephone interview will advance prosecution of this application.

Respectfully submitted,



Niels Haun
PTO Reg. No. 48,488

DANN DORFMAN HERRELL & SKILLMAN
A Professional Corporation
1601 Market Street, Suite 720
Philadelphia, PA 19103
Phone: (215) 563-4100
Fax: (215) 563-4044

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